Amendments to the Claims:

1. (Cancelled)

2. (Currently Amended) [[The]] A method of ~~claim 1, further~~ planning a radiation therapy, the method comprising the steps of:

determining a dose distribution for a target volume on the basis of a first image;

determining at least one of shape and position variation of a surface of an object of interest in the target volume between the first image and a second image, the first and second images being taken at different points in time of a radation process, including:

applying a first surface mesh to the object of interest in the first image;

performing a first adaptation of the first surface mesh to a surface of the object of interest in the first image resulting in a second surface mesh;

applying the second surface mesh to the object of interest in the second image;

performing a second adaptation of the second surface mesh to the surface of the object of interest in the second image resulting in a third surface mesh; and

obtaining a difference between the second surface mesh and the third surface mesh;

adjusting the dose distribution on the basis of the at least one of shape and position variation; and

at least one of storing the adjusted dose distribution and displaying the adjusted dose distribution.

3. (Original) The method of claim 2 further comprising the steps of:

generating a volumetric model of the object of interest on the basis of the second surface mesh; and

deforming the volumetric model on the basis of the difference resulting in a deformed volumetric model.

4. (Original) The method of claim 3,

wherein the difference is used as a boundary condition for the deformation of the volumetric model.

5. (Original) The method of claim 3,

wherein the at least one of shape and position variation of the object of interest is determined on the basis of the deformed volumetric model.

6. (Original) The method of claim 3,

wherein a biomechanical model is taken into account for the deformation of the volumetric model.

7. (Previously Presented) The method of claim 2, wherein the first and second images are computed tomography (CT) images.

8. (Cancelled)

9. (Currently Amended) A radiation therapy planning device, comprising:

a memory for storing a first image and a second image; and

a processor for:

applying a first surface mesh to the object of interest in the first image;

performing a first adaptation of the first surface mesh to a surface of the object of interest in the first image resulting in a second surface mesh;

applying the second surface mesh to the object of interest in the second image;

performing a second adaptation of the second surface mesh to the surface of the object of interest in the second image resulting in a third surface mesh;

obtaining a difference between the second surface mesh and the third surface mesh;

generating a volumetric model of the object of interest on the basis of the second surface mesh;

deforming the volumetric model on the basis of the difference resulting in a deformed volumetric model;

determining a dose distribution for a target volume on the basis of the first image;

determining at least one of shape and position variation of an object of interest in the target volume between the first image and the second image; and

adjusting the dose distribution on the basis of the at least one of shape and position variation;

wherein the first and second images ~~where~~ were taken at different points in time of a radiation treatment process.

10. (Original) The radiation therapy planning device of claim 9, wherein the difference is used as a boundary condition for the deformation of the volumetric model; and

wherein a biomechanical model is taken into account for the deformation of the volumetric model.

11. (Currently Amended) A computer readable medium carrying a computer program for a radiation therapy planning device, wherein a processor of the radiation therapy device performs the following operation when the computer program is executed on the processor:

determining a dose distribution for a target volume on the basis of a first image;

applying a first surface mesh to the object of interest in the first image;

performing a first adaptation of the first surface mesh to a surface of the object of interest in the first image resulting in a second surface mesh;

applying the second surface mesh to the object of interest in the second image;

performing a second adaptation of the second surface mesh to the surface of the object of interest in the second image resulting in a third surface mesh;

obtaining a difference between the second surface mesh and the third surface mesh;

generating a volumetric model of the object of interest on the basis of the second surface mesh;

deforming the volumetric model on the basis of the difference resulting in a deformed volumetric model; and

adjusting the dose distribution on the basis of the deformed volumetric model;

wherein the first and second images ~~where~~ were taken at different points in time of a radiation treatment process.

12. (Previously Presented) The method of claim 2, wherein the second surface mesh and the third surface mesh result from applying the same surface model.

13. (Previously Presented) The radiation therapy planning device of claim 9, wherein the second surface mesh and the third surface mesh result from applying the same surface model.

14. (Cancelled)

15. (Previously Presented) The method of claim 17, wherein the subsequent image is acquired prior to a radiation therapy treatment.

16. (Previously Presented) The method of claim 17, wherein the subsequent image is acquired prior to a predetermined interval of radiation therapy treatments.

17. (Currently Amended) [[The]] A method ~~of claim 14, for~~ adapting a dose distribution of a radiation therapy plan comprising:

adapting a first surface mesh to an object of interest in a first image resulting in a first adapted surface mesh;

adapting ~~wherein the second surface mesh is~~ the first adapted surface mesh to the object of interest in a subsequent image resulting in a second adapted surface mesh;

deforming a volumetric model of the object of interest based on a difference between the first adapted surface mesh and the second adapted surface mesh; and

at least one of storing the deformed volumetric model and displaying the deformed volumetric model.